WEST VIRGINIA DEPARTMENT OF
NATURAL RESOURCES

WILDLIFE RESOURCES
DIVISION

# WEST VIRGINIA NONGAME NEWS

VOLUME 3, NUMBER 2

SPRING 1985

## Butterfly Gardening

*Tom Allen, DNR Biologist*

Butterflies can be a welcome addition to your home and surroundings. Not only do their bright colors add excitement to our lives, but they are also effective crop and flower pollinators, play an important role in the food chain, and are sensitive indicators of environmental quality. Weeds and wildflowers are all it really takes to produce a butterfly garden. However, to attract the greatest number and variety of these beautiful creatures, plants that serve all the life stages of butterflies must be provided.

All of the approximately 760 different butterflies in the U.S. and Canada follow the same general life cycle. The cycle begins with eggs, laid in spring, summer or fall. Once hatched the tiny larvae (or caterpillars) molt 4 to 5 times, before enveloping themselves in a cocoon or chrysalis. In this pupal stage the caterpillar undergoes metamorphosis and emerges as an adult butterfly. The entire process takes an average of 5 to 6 weeks. Some butterflies go through only one cycle or generation each year. Some, however, may have 2 and even 3 generations in a single season.

The butterfly's life cycle requires food for both the larval and adult stages. Often the food for the larval stage is the most critical. Thus, many butterflies lay their eggs on or near the plants upon which the larvae feed. Most caterpillars eat the leafy parts of their host plants, but, depending on the species, may prefer flowers, weeds, vines, shrubs or trees. For specific examples, see Table I.

Unlike the finicky caterpillars, adult butterflies may take nectar from many different plants. Nectar is sipped through a long, straw-like proboscis that is normally kept coiled. The insects' feet possess a special sensing structure which can detect or "taste" sweet liquids, causing the proboscis to uncoil when in contact with nectar.

Butterflies frequent wildflowers as well as cultivated annuals and perennials. The three most important floral characteristics that attract butterflies to a flower are a copious supply of nectar, a blossom with large petals so that the insect can perch while feeding, and flower color. Butterflies seem to investigate purple flowers first, then yellow, pink and finally white. Table II includes only a sampling of the many blossoming plants attractive to adults.

Although their most popular food source is nectar, not all adult butterflies are nectar feeders. Some prefer to "puddle." Puddling is usually done by newly emergent males which gather to take moisture and minerals from damp sand, mud puddles or stream banks. Often a garden pool will attract butterflies to the water's edge. A number of species will also seek nourishment from the moisture in animal waste or carrion.

In order to encourage butterflies to your backyard, there are several facets with which you need to be familiar. First, learn the names of the local butterflies, their life cycles, food preferences, the places they hibernate, seek cover and pupate, and identify the plants suitable for egg laying. This all can be accomplished through the use of field guides, such as *The Audubon Society Field Guide to North American Butterflies* by Robert Pyle or *Butterflies East of the Great Plains* by Paul Opler and George Krizek.

Once you have established which butterflies you want to attract and the plants that will entice them, gather and sow the desired plant seeds ensuring the proper growing conditions for each plant type. Sun and shade relationships should be assessed, as well as plant groupings. Even with limited space you can still create a world for butterflies. Many preferred food plants make attractive borders, can be planted in cool shady spots (such as violets) or, as in the case of vines, be trained to archways and fences, thus expanding your garden upward. Certain desired butterfly species may not appear the first year. The success of your garden requires constant patience and evaluation.

If the area you select is already a

*(Continued on Page 2)*

## BUTTERFLY GARDENING

*(Continued from Page 1)*

### Table I. Larval Food Plants

| *Plant* | *Butterfly Species Attracted* |
|---|---|
| Clover family | blues, sulphurs |
| Dock | coppers |
| Elm | mourning cloak, question mark |
| Grasses | satyrs |
| Hackberry | hackberry, tawny emperor, snout-nosed |
| Hawthorn | gray hairstreak |
| Mallow family (cheeseweed) | common hairstreak, checkered skipper |
| Milkweed | monarch |
| Nettle | tortoise shell, painted lady, question mark, red admiral, hop merchant (or comma), veined white |
| Parsley family | black swallowtail |
| Plantain | buckeye |
| Poplar | mourning cloak, viceroy, red-spotted purple |
| Sorrel | American copper |
| Spicebush | spicebush swallowtail |
| Thistle | painted lady |
| Turtlehead | baltimore |
| Violet | aphrodite, great-spangled, fritillary |
| Wild cherry | eastern tiger swallowtail, coral hairstreak, red-spotted purple |
| Willow | comma, tortoise shell, viceroy, red-spotted purple |

natural area, few alterations may be required. Open places such as meadows are subject to natural succession and may need to be mowed periodically to keep out brush. Only a section should be mowed in any one year so as not to upset the established life cycles of butterflies in unmowed sections. Situating your butterfly garden near a woodland may also attract more species.

Several potions may be used to attract butterflies and moths. One favorite can be made as follows: 1 bottle of beer spiked with banana, several tablespoons of brown sugar and molasses, ½ cup of raisins and several apple slices. Homogenize the mixture in a blender and store it in a loosely capped bottle for several days. Once the mixture has fermented it is ready for use. For moths, liberally brush on tree trunks. To attract butterflies, soak a sponge in a bowl and place it in broken sunlight or open shade. A slight breeze will broadcast the aroma.

There is no secret formula—but the more time you spend butterfly gardening and the more willing you are to experiment, the more accurately you will be able to assess your butterflies' needs. Butterfly gardening can be a new and enjoyable pastime—as well as enhancing your surroundings and the quality of your environment.

### Table II. Nectar Plants

| *Cultivated Annuals* | *Cultivated Perennials* | *Wild Perennials* |
|---|---|---|
| Alyssum | Anthemis | Boneset |
| Candytuft | Arabis | Dandelion |
| Cosmos | Aubrieta | Goldenrod |
| Gaillardia | Buddleia | Joe-pye-weed |
| Marigold | Butterfly weed | Milkweed |
| Mignonette | Daisy | New England aster |
| Scabiosa | Catmint (Catnip) | Thistle |
| Verbena | Phlox | Wild bergamot |
| Zinnia | Primrose | Yarrow |

*(Tables adapted from "Butterflies are Free," by Maryanne Newsom-Brighton, National Wildlife, April-May 1982)*

*A survey of WV butterflies was conducted in 1984 in conjunction with the Nongame Wildlife Program of the WV DNR. Efforts were concentrated on determining distribution and abundance of uncommon butterfly species found within the State.*

*One hundred and nineteen species of butterflies, including 39 kinds of skippers, have been documented to occur in WV at the present time. Assistance is needed in developing a more complete listing of butterfly species and their distribution in WV. Persons interested in assisting this project as cooperators may obtain current information, maps, and a checklist on butterfly species from Tom Allen, WV DNR, P.O. Box 67, Elkins, WV 26241.*

# Nongame Project Review

### ● Nongame Wildlife Weekend

The Nongame Wildlife Weekend will again be held at Blackwater Falls State Park, June 7-9, 1985. Some of the topics to be covered include: Bird Banding in WV, Ferns, Flying Squirrels, WV Snakes, The Gypsy Moth, Owls of WV, Edible Wild Foods, and Nocturnal Animals. In addition to a variety of displays and exhibits, there will be several field trips featuring nongame species of Canaan Valley. New events this year include a nature photography workshop and a workshop for teachers. If you are interested in participating in this year's event, contact the WV Nongame Wildlife Program.

### ● Cooperative Projects

Early this year, 35 cooperative nongame wildlife project grants totalling $15,910 were awarded to conservation oriented organizations in 23 counties. Individual grants ranged from $110 to $500.

The grants will be used to develop such nongame wildlife projects as nature trails, wildlife observation areas, nongame wildlife sanctuaries, educational programs, surveys and a traveling nongame exhibit. Garden clubs, scout troops, conservation clubs, 4-H clubs and school conservation clubs were among the grant recipients. Projects will be completed during 1985.

Write to the Nongame Wildlife Program for the 1986 Cooperative Projects Instructional and Application Booklet and get an early start on your 1986 proposal. The deadline for 1986 project submission is October 31, 1985.

### ● Breeding Bird Atlas Update

WV Atlas Project volunteers covered 135 blocks in the first year of this 5-year project sponsored by the WV Nongame Wildlife Fund. This represented about 26% of the blocks that must eventually be covered. Although this is a good start, more volunteers are needed to complete the approximately 500 blocks designated for study.

Volunteers need not be experienced birders. Workshops on techniques and map reading will be provided for those interested, and all participants will receive a Breeding Bird Atlas Newsletter updating the progress of the survey. In addition, this year the Atlas Project will pay 20¢ per mile to any volunteers who travel more than 30 miles round trip to visit an atlas block.

If interested in participating in the project this year or for more information, contact Dr. A. R. Buckelew, Jr., Biology Department, Bethany College, Bethany, WV 26032 (304) 829-7641.

*It is the policy of the Department of Natural Resources to provide its facilities, accommodations, services and programs to all persons without regard to sex, race, color, age, religion, ancestry, national origin, or handicap. Proper licenses/registration and compliance with official rules and regulations are the only sources of restrictions for facility use or program participation.*

*The Department of Natural Resources is an equal opportunity employer.*

# Federal Nongame Bill

Now is a critical time for all those interested in WV's priceless wildlife resources. The first of the hearings for the reauthorization of the Fish & Wildlife Conservation Act of 1980 (HR 1406), better known as the Nongame Wildlife Bill, was scheduled for April 17, 1985. It is imperative that conservation organizations and interested individuals write to their respective Congressional delegation and the House and Senate chairmen in support of the Act.

Legislation was never drafted to provide funding for the 1980 Act. The bill, as written, could provide matching funds to state nongame wildlife programs. In addition, it would also provide cost sharing to states for comprehensive fish and wildlife planning. Because of the increasing competition of other tax check-off programs in West Virginia (this year one for child abuse) the Federal Nongame Bill is critical for the future development of State nongame wildlife and endangered species programs.

Please write as soon as possible to Representative Breaux and Senator Chafee, with copies to your congressional delegation, urging them to: 1) reauthorize the Fish & Wildlife Conservation Act, scheduled to expire September 30, 1985 and 2) draft legislation that would provide a minimum funding level of $50 million, utilizing the recommendations of the Funding Recommendations Oversight Group.

There has been very little public interest to date concerning this issue. So please write today to:

Senator John H. Chafee, Chairman
Senate Public Works Subcommittee
on Environmental Pollution
Dirksen Office Building
Washington, D.C. 20510

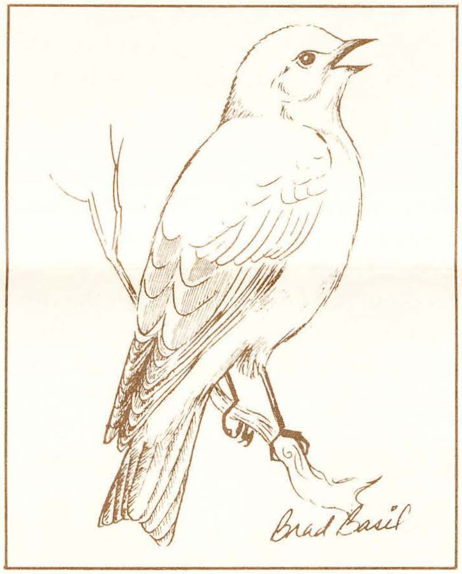
Representative John B. Breaux,
Chairman
Merchant Marine and Fisheries
Subcommittee on Fisheries &
Wildlife Conservation
Rayburn House Office Building
Washington, D.C. 20515

# Bluebird Brochure

A brochure describing how to build, place, and maintain nest boxes for bluebirds is available from the Wildlife Resources Division's Nongame Wildlife Program.

In addition to its melodic song and colorful presence, the eastern bluebird is one of the many natural insect pest controllers that you can invite to your property. But this beautiful bird has experienced a decline in the last 50 years. One of the causes has been a decrease in the availability of holes or cavities in which the bluebird builds its nests. The wooden fence posts and dead trees with holes created by woodpeckers or through natural decay that are used by bluebirds are not as plentiful as they once were. Metal or treated fence posts have replaced the fence posts of the past, and dead or dying trees are often destroyed because they are unsightly or used as firewood. You can help replace these natural cavities by building nest boxes.

For your free bluebird nest box brochure, write: Bluebirds, Nongame Wildlife Program, The Department of Natural Resources, P.O. Box 67, Elkins, WV 26241.



*"Hats off" to the students at Potomac State College for their generous support of West Virginia's Nongame Wildlife program.*

*Students at Potomac State College celebrated the 16th Annual Earth Week April 15-19, 1985. This year's Earth Week Steering Committee co-chairpersons, Melissa McDaniel and Doug Shaffer, presented the proceeds from Earth Week activities to the West Virginia Nongame Wildlife Program. Also contributing were the members of the Potomac State Life Science Club.*

# Teacher Packets

The National Institute for Urban Wildlife is announcing the availability of a series of 8 Wildlife Habitat Conservation Education Teacher's pacs. Developed by the U.S. Fish & Wildlife Service, the pacs include: Urban Areas; Freshwater Marshes; Beaches, Dunes and Barrier Islands; Wetland Conservation and Uses; Endangered Species; Migrating Birds; Hunting & Wildlife Management; and Wildlife Conflicts. Each pac contains a poster, teacher overview, lesson plans—featuring a hands-on activity approach—and student centered pages designed to enhance enjoyment of environmental education. They are available for $5.00 each plus $3.00 postage and handling from the National Institute for Urban Wildlife, 10921 Trotting Ridge Way, Columbia, MD 20144.

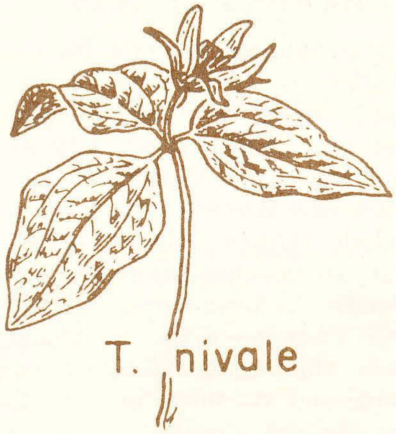
# The Rainbow Darter

When people think of fish, most are reminded of our game fishes, preferably struggling in vain at the end of a fishing pole. But the streams of West Virginia hold many other lesser known fish species that are nevertheless interesting and entertaining to the casual observer.

The rainbow darter (*Etheostoma caeruleum*) is considered to be one of the most colorful of our native fishes. This species inhabits riffles over coarse gravel or rubble in clear, moderate to large streams. In West Virginia, it can be found in the Ohio River drainages and the headwaters of the Potomac River. The darters (comprising about 140 species) were so named because of their habit of moving in short, quick movements to a new position when approached or disturbed.

Although the rainbow darter is a small fish (the average length is about 2 inches) this species makes up for its size by its brilliant coloration. The breeding male has an array of blues and greens on the head and breast, with yellow or orange between the 6 to 10 saddle marks and vertical stripes on the back and sides. The fins display the same tones of green, yellow, and orange, while each has a narrow outer

(Continued on Page 7)



*Trillium nivale*
(Reprinted from *Flora of WV*)

## Trilliums

*by Garrie Rouse*
*DNR Botanist*

With the coming of another growing season, plant enthusiasts will once again take to the outdoors to see the impressive array of spring wildflowers. By mid-May, West Virginia's forests will be carpeted with an overwhelming diversity of flowers, including the striking and popular trilliums.

Trilliums are low, perennial, herbaceous plants whose broad leaves form a whorl which subtends a single flower. The name "trillium" is derived from the Latin word for three, "tres," and alludes to the three-parted nature of the plant, with its 3 leaves, 3 sepals and 3 petals. The blossoms of most trilliums are quite showy and easily recognized. This flower occurs in rich woods, and can sometimes form large and impressive patches.

There are seven species of trilliums in West Virginia, although 2 have not been seen since the late 1800's. Of the 5 remaining, the most common (and perhaps most handsome) is the large flowered trillium (*Trillium grandiflorum*) whose 2 to 3 inch blossoms may be found throughout rich woods from mid-April into June. The flowers are pure white but often turn pink with age. At one time, the underground portion of the stem was believed to contain a cure for snakebites.

Another common trillium found in our woods is the wake robin (*T. erectum*). Its maroon flowers are in bloom near the time that robins return and hence the common name. The blossoms produce a strong, disagreeable odor and this, combined with their distinctive color, attract carrion-feeding insects for pollination purposes.

A third species which is occasionally found in our forests is the sessile trillium (*T. sessile*). The flower of this plant looks like a partially opened wake robin, but differs in that the blossom is stalkless and lacks the foul odor.

The painted trillium (*T. undulatum*) is distinguished from all other trilliums by the red color and veining at the base of its white petals. This plant typically occurs in more northern regions, but can be found at higher elevations of our State within damp mountain woods.

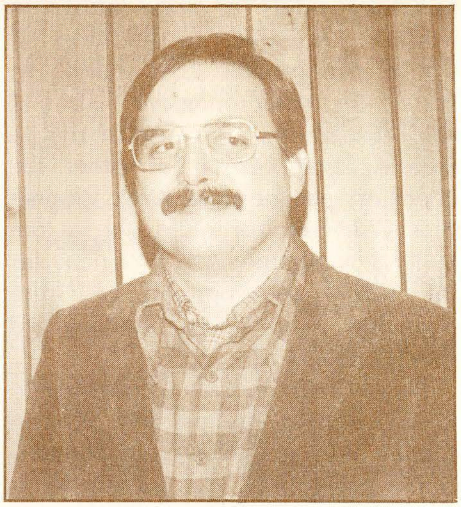
Finally, there is yet another trillium native to West Virginia—the snowy trillium (*T. nivale*). This plant is the smallest of our trilliums and is quite rare. Its white blossoms appear in late March making it one of the first spring wildflowers. Native populations of the snowy trillium are presently known from only three counties. This species is currently being monitored by the West Virginia Department of Natural Resources.

Keeping a checklist of the different trilliums which one has seen over the years can be a rewarding endeavor, as the showy plants are easily recognized and a number of different kinds can be found in the State. Furthermore, searching for trilliums provides a good excuse to get outdoors after a long winter and witness the reawakening of our forests with the profusion of spring wildflowers. How many trilliums have you seen this year?

## Endangered Species Note

● Forty-six native and foreign animals and plants, from China's giant panda to the tiny bumblebee bat, were added to the U.S. List of Globally Endangered and Threatened Species during 1984, according to the U.S. Fish & Wildlife Service. Among U.S. species, the Wyoming toad, woodstork, and the woodland caribou are now protected by the Act. The number of endangered and threatened species on the list now totals 828, of which 331 are found in the U.S. The total includes 297 mammals, 220 birds, 99 reptiles, 85 plants, 62 fishes, 24 clams, 16 amphibians, 12 insects, 9 snails, and 4 crustaceans. An additional 54 species were proposed last year for listing.

Last year provided some good tidings, however. Species that appear headed toward eventual recovery include: the Arctic peregrine falcon, Utah prairie dog, snail darter, southeastern population of the brown pelican, and the Florida population of the American alligator.—*Endangered Species Technical Bulletin, Vol. IX No. 12 (1984)*



### Dr. A. R. Buckelew, Jr.

Dr. Buckelew, co-director of the WV Breeding Bird Atlas Project, is also one of the original members of the Nongame Advisory Council. He is currently a professor of Biology at Bethany College in WV, teaching such diverse scientific subjects as microbiology, genetics, ecology, histology, biochemistry, ornithology and field botany. An avid birder, Dr. Buckelew has been editor of both *The Redstart,* journal of the Brooks Bird Club and the *Sutton Screech,* newsletter of the Sutton Audubon Society. In addition, he has served as director of the Brooks Bird Club Annual Foray and Oglebay Institute's summer camp at Terra Alta. We are fortunate to have on the council an individual with such an active interest and participation in nongame issues.

# Freshwater Mussels

Many people, when fishing, swimming, or simply dreaming away the hours watching the water flow by, never see or are even aware of a fascinating group of creatures known variously as mussels, clams, or bivalves. In fact, North America has the richest freshwater mussel fauna in the world. Two hundred and twenty-five species have been reported in North America, with 130 reported from the Ohio River System alone. Today, in many unpolluted streams in WV, the trained observer can usually spot 20 to 30 different kinds of freshwater mussels.

Mussels live in a variety of aquatic habitats, but all require areas where the running water has a high oxygen content and supplies a rich food source of organic particles and microorganisms (single-celled animals, bacteria and diatoms). The constant flow of water also removes waste materials that would be toxic to the clams. The best substrate for freshwater mussels is a combination of silt, sand, gravel or cobble with little sedimentation. Some bi-valves exist in the stiller waters of natural lakes and ponds. However, they are almost never found in impoundments. This is due to sedimentation, recirculation of waste toxic to clams, and the high concentrations of carbon dioxide and carbonic acid which dissolves their calcerous shells.

According to Paul Parmalee in *The Freshwater Mussels of Illinois,* all mussels possess a soft body enclosed by two separate shells (Figure 1) Hence the common name of "bi-valve." The adult lives its entire life partly embedded in the substrate, active only in warm months. Mussels move by extending the foot (see Figure 2) out from between the shells and wedging it into bottom material. The body is then pulled along by contraction of the muscles within the foot. Mussels feed and derive oxygen by drawing in water through the incurrent siphon and transferring the material to the stomach and gills, respectively. Wastes are expelled through the excurrent siphon.

The life cycle of the freshwater clam is a complex and fascinating phenomenon. Four distinct stages occur: 1) the fertilized egg, 2) the young or glochidium (Figure 3) in the brood sac of the female mussel, 3) the glochidium in the parasitic stage on a fish or salamander and 4) the adult, free-living stage with a shell.

Mussels are either male or female, although a few species are hermaphraditic. In many species the two sexes can be told apart by the shape of the shell. The male sex cells are released into the water and are taken into the female's body through the incurrent siphon. They are then transported to the gills where the eggs are fertilized. The gills now serve as brood pouches as well as respiratory organs (Figure 2).

Next, the eggs develop into glochidium, possessing only partially developed organs. At this point they are discharged from the female through the excurrent siphon into the water column. If they are to survive, they must be taken into the mouth of a passing fish and attach themselves to its gills. The glochidium remain embedded for 1 to 6 weeks in the tissues of the host fish, not increasing in size, but developing adult structures. Some species of mussels parasitize only one species of fish, while others are not as particular. This parasitism usually does not harm the host fish.

*(Continued on Page 6)*

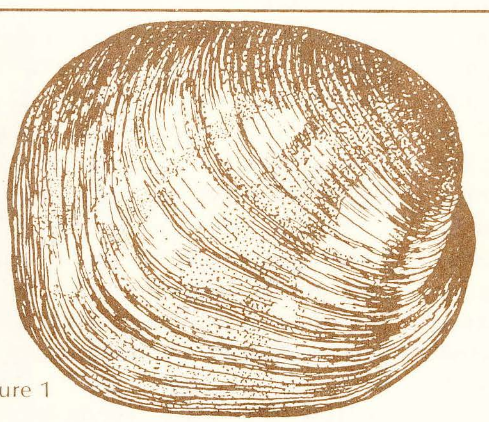


Figure 1

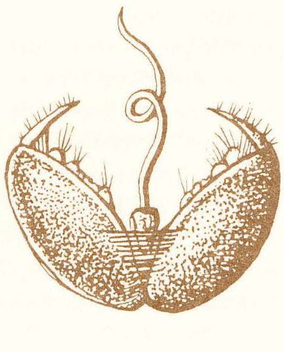


Figure 3

Diagrammatic illustrations of *Lampsilis orbiculata*, the pink mucket pearly mussel; Figure 1. Top: Exterior of right valve. Figure 2. Bottom: Interior anatomy: (A) Excurrent siphon, (B) Incurrent siphon, (C) Mantle, (D) Shell, (E) Modified outer gill, (F) Foot. Figure 3. glochidium.

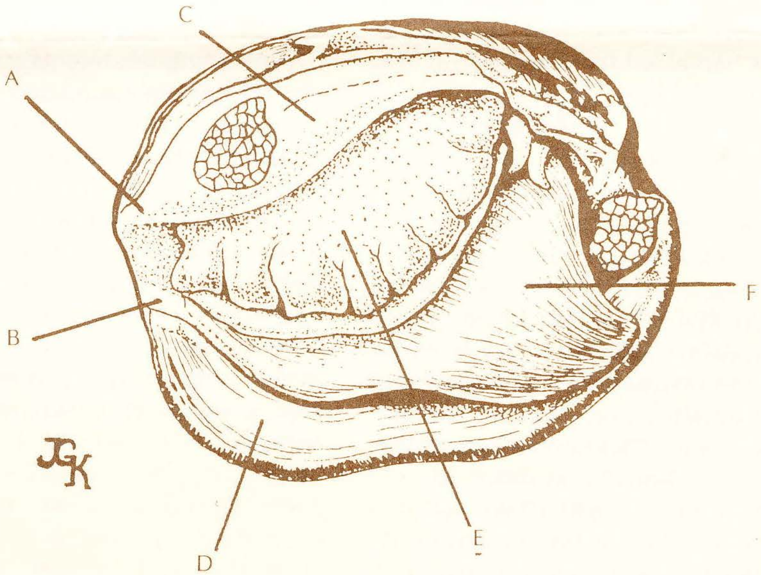


Figure 2

## FRESHWATER MUSSELS

*(Continued from Page 5)*

At the end of the third stage the young clam dislodges itself from the fish and falls to the bottom. If a suitable substrate is encountered, the young will survive and grow to adulthood.

Mussel shells are composed of 3 layers, the outer two being formed by glands at the edge of the mantle, and the inner, pearly iridescent or nacre layer is secreted by the entire mantle surface (Figure 2). The shell grows in area by the addition of material at the margin, and in thickness by successive deposits of nacre across the shell's entire inner surface. In general, mussels that inhabit rivers or streams with a fairly fast current develop thicker shells than those found in shallow, quiet areas.

Mussels have been and are currently extremely important to man in several different ways. Native Americans used them as a food source, and shell heaps or middens may be found at many sites. These middens are important to malachologists—those who study mollusks—as they can indicate past abundance and species composition of a particular area. Many kinds of mussels now extinct or very rare have been found in the middens. Indians also valued the pearls found in nearly all kinds of freshwater mussels for ornamentation.

The late 1800's witnessed the birth of the button industry which produced buttons from mussel shells. The soft bodies of the millions of clams harvested for this purpose also provided food for livestock. However, the development and refinement of plastics after World War II spelled doom for this industry.

In the 1960's an unusual need for the shells developed that continues today as a multi-million dollar industry. Pellets cut from the mussel shell, called baroques, are used to seed oysters in order to produce cultured pearls.

Freshwater mussels are an important food source for muskrat and other furbearers, waterfowl, and fish (especially the freshwater drum). Bivalves can also be used as fish bait. Besides their aesthetic appeal, mussels are *very important* indicators of water quality. Because freshwater mussels are filter feeders, often dependent on one species of fish for reproduction, and are basically sedentary and quite long lived, they are adversely affected by long-range water quality problems (pollution), physical barriers such as dams and locks, and changes in the abundance of fish, algae and other microorganisms.

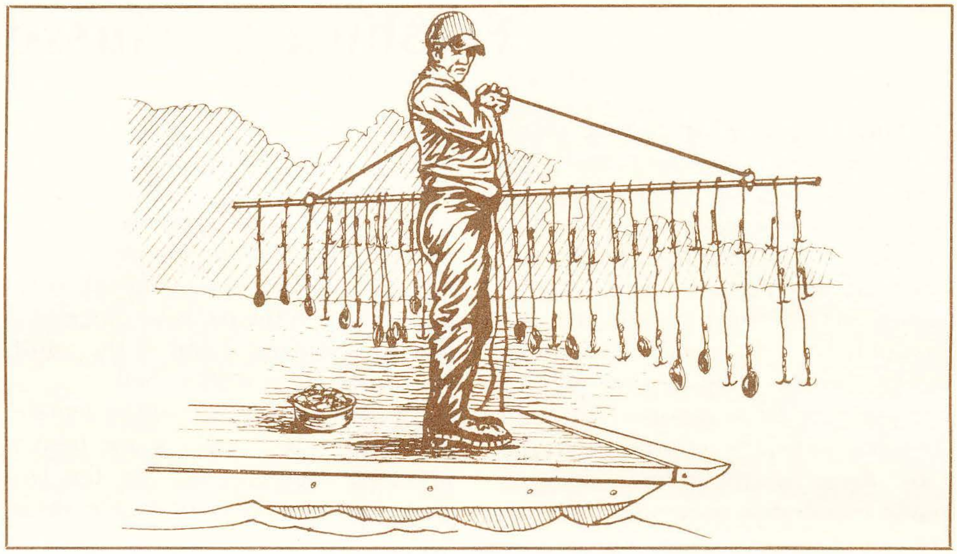


Figure 4

Populations of all freshwater mussels have been drastically reduced in our streams and waterways, many to the point of extinction. West Virginia has two known federally endangered mussels, the pink mucket pearly mussel (*Lampsilis orbiculata*) and tuberculed-blossom pearly mussel (*Epioblasma torulosa torulosa*), found now only in the Kanawha River. The reasons for their decline are many, and all related directly to man's activities. Impoundments, dams, or other activities associated with these facilities create: excess sedimentation, which covers their siphons and suffocates them; physical barriers that isolate populations and separate them from host fishes; increased metals and other pollutants; and fluctuations in water flow that decreases nutrient and oxygen availability and prohibits toxic waste removal. Perhaps even more damaging because entire beds are destroyed are the activities of commercial sand and gravel dredging, navigation maintenance dredging, and barge handling associated with permanent loading and unloading facilities.

Because of their importance in the ecosystem and extent of their decline, freshwater mussels warrant further study as to distribution, relative abundance, species diversity, and population stability. Some of the methods to accomplish this include: handpicking in shallow water and along the shoreline (especially muskrat middens), water scoping, snorkeling or general shallow diving, scuba diving and brailling. The latter two methods are essentially the same as used by commercial harvesters. In brailling, an individual stands at the end of a flat-bottomed "John" boat, lowering an apparatus known as a mussel brail with attached hooks. The hooks are dragged across the bottom as the boat drifts with the current (see Figure 4). When a prong of a hook enters the partially open shells and touches or becomes embedded in the soft parts of mussels, the valves instantly clamp shut on the hook.

Studies such as these have been conducted by biologists of the Department of Natural Resources, Water Resources Division and the U.S. Fish and Wildlife Service in order to learn more about mussels and make recommendations on water project and policy development. This will ensure better protection of these rapidly dwindling, valuable and fascinating creatures.

*(The author wishes to thank Bill Tolin of the U.S.F.W.S. for his technical assistance in the preparation of this article.)*

## WVU Student Chapter of the Wildlife Society

*by Terri Madl, President*
*WVU Student Chapter of*
*The Wildlife Society*

The Wildlife Society is an international, nonprofit organization comprised of professionals serving in the resource management field, especially wildlife ecology and management. The Society's goals are to: (1) increase awareness and appreciation of wildlife values, (2) increase public awareness of the factors affecting the conservation and management of wildlife resources, (3) take an active role in preventing human-induced environmental degradation, (4) develop and promote sound stewardship of wildlife resources, and (5) plan and cooperate with other wildlife resource-oriented groups and agencies. Publications include: *The Journal of Wildlife Management, Wildlife Monographs, Wildlife Society Bulletin* and many books that are used in university courses as references. The society's broad interests are depicted in its unique emblem, featuring Egyptian hieroglyphics. Translation of the figures, from top to bottom is: mammals, birds, fish and flowering plants.

A politically active group, the Wildlife Society has a state chapter in almost every state, including West Virginia. One of these chapters within the Mountain State is the West Virginia University Student Chapter. Under the current supervision of Dr. Ed Michael, the Student Chapter is 40 members strong and has existed at the University since 1969. The student chapter is a social organization open to any student with an interest in wildlife resources. Members include Wildlife Resources majors, Animal and Veterinary Science majors, Forestry majors, and Wood Science majors.

One of the goals of the Chapter is to increase the public's awareness of wildlife issues by participating in activities with other organizations that reflect the public's interest and involvement. Some of these activities include exhibits at the annual French Creek Game Farm for National Hunting and Fishing Day, and at the Mountain State Forest Festival. In addition, members appear at the sectional conclave each year and compete for a trophy that earns us bragging rights for the year as the number one wildlife school in the East. This year members traveled to the Pine Barrens in New Jersey for the competition.

The Student Chapter also conducts fund raisers to help cover the costs of traveling expenditures and the yearly contribution of the *Journal of Wildlife Management* to WVU's Forestry library.

This year the Student Chapter became part of a new project with the Mountaineer Audubon Society and residents of Morgantown. Screech owl nest boxes were erected on a site in Morgantown that will be periodically checked to determine occupancy. We plan on participating in this project in future years. Partial funding was provided by a grant awarded through the Nongame Cooperative Projects program.

THE WILDLIFE SOCIETY

For more information about the Society's services and programs, write to Executive Director, The Wildlife Society, 5410 Grosvenor Lane, Bethesda, MD 20814.

The Student Chapter is located in Percival Hall at WVU. The monthly meetings are open to everyone. For more information write: Terri Madl, President, WVU Student Chapter of the Wildlife Society, Percival Hall, WVU, Morgantown, WV, or call 304/293-4797.

## RAINBOW DARTER

*(Continued from Page 3)*

margin of a blue-green color. As in birds, male darters are usually more colorful than females.

The rainbow darter spawns in shallow riffles from late March to May. The males establish small, continuously shifting territories (about 1 foot wide by 2 feet long) which they vigorously defend while displaying their brilliant coloration to attract females. Following a brief courtship period, a female will lay from 3 to 7 eggs at one time that are simultaneously fertilized by the male. A total of about 800 eggs will be laid in a substrate of coarse or fine gravel, or rubble. The eggs will hatch in 10 to 12 days.

This species feeds mainly on mayflies, midges, water mites, caddisflies, and blackflies. In addition, they will often eat the eggs of stream spawning minnows and lampreys. The darters, in turn, are consumed by stream-dwelling game fishes such as the basses and catfishes which feed in the riffles.

It is believed the rainbow darter's greatest value to man is as an indicator species, because it will not survive in streams that have been subjected to siltation or chemical pollution. However, of perhaps greater importance is the knowledge that these beautiful creatures exist in the streams of the Mountain State.

## Winter Birds

The WVU Cooperative Extension Service is announcing another new publication entitled *Winter Birds of West Virginia,* by Norma Jean Venable. Fifty-four common winter birds are described and illustrated in this 25-page booklet. Attractively designed, with drawings by Diana Stirrat, it is suitable for those interested in identifying birds. The cost is $3.50 per copy, postpaid, with checks payable to West Virginia University. Send orders to Norma Jean Venable, Division of Agriculture & Forestry, 406 Knapp Hall, Morgantown, WV 26506-6031.

**WEST VIRGINIA NONGAME NEWS**

Subscription Order Form

DO
SOMETHING
WILD!

Name ____________________

Address ____________________

City, State, Zip ____________________

Organization ____________________

Send form to:
WEST VIRGINIA NONGAME NEWS
Wildlife Resources Division
Department of Natural Resources
P.O. Box 67
Elkins, WV 26241

*WEST VIRGINIA NONGAME NEWS*
*published quarterly by*
*Department of Natural Resources*
*Nongame Wildlife Program*
*Wildlife Resources Division*

*Arch A. Moore, Jr.*
*Governor*

*Ronald R. Potesta*
*Director, Department of Natural Resources*

*Robert L. Miles*
*Chief, Wildlife Resources Division*

*Kathleen Carothers*
*Editor*

*Ideas for articles are welcomed*

## Something New

Here is your chance to spread the word about the WV Nongame Wildlife Program. Nongame T-shirts are now available in adult sizes S, M, L and XL and children's sizes 6-8, 10-12 and 14-16. Colors and styles are variable according to size. Adult T-shirts are $6.25 and children's $5.00 postpaid. Simply send a check or money order made out to the WV Department of Natural Resources and state size and color choice (substitutions may be necessary). Send in your order today, as supplies are limited.

Remember to DO SOMETHING WILD! and support the West Virginia Nongame Wildlife Program.

"Check-off" Line 8 on your WV Income Tax Form.

## First Edition of WV Wildlife Calendar

*The WV Department of Natural Resources is now taking orders for the first edition of the WV Wildlife Calendar. Only $5.00, the calendar features original attractive paintings by WV artists. Each print has a description of the animal depicted. In addition, the calendar includes daily hunting and fishing information, plus a wealth of additional wildlife facts concerning both game and nongame animals. The calendar runs from September 1985 through August 1986, and will be mailed during July and August of 1985.*

**THE 1985-1986 WEST VIRGINIA WILDLIFE CALENDAR**

Send me ____ 1985-1986 West Virginia Wildlife Calendars at $5.00 each.

____________________
NAME

____________________
ADDRESS

____________________
CITY STATE ZIP

**MAKE SURE ZIP CODE IS INCLUDED!**

Make check or money order payable to:
**West Virginia Dept. of Natural Resources**

**MAIL TO:**
**WILDLIFE CALENDAR**
**West Virginia Dept. of Natural Resources**
**P.O. Box 67**
**Elkins, WV 26241**

*Calendars will be mailed during July-August*

**SPRING 1985** **Vol. 3 No. 2**

WV NONGAME NEWS

West Virginia Dept. of Natural Resources
Wildlife Resources Division
Nongame Wildlife Program
P. O. Box 67
Elkins, West Virginia 26241

*(Return Postage Guaranteed)*

**BULK RATE**
**POSTAGE PAID**
**PERMIT NO. 67**
**ELKINS, WV 26241**